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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/006,704	12/10/2001	Shane J. Trapp	M4065.0369/P369-A	3229

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EXAMINER
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UMEZ ERONINI, LYNETTE T

ART UNIT	PAPER NUMBER
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1765

DATE MAILED: 12/30/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/006,704

Applicant(s)

TRAPP, SHANE J.

Examiner

Lynette T. Umez-Eronini

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 30 September 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 26-32, 71 and 77 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 26-32, 71 and 77 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claim 71 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

On lines 4-5, "a plasma etchant mixture consisting of at least two fluorocarbons CF<sub>4</sub> and NH<sub>3</sub>" is indefinite because it is unclear whether the etchant mixture consists of two fluorocarbons, CF<sub>4</sub>, and NH<sub>3</sub> or consists of a different combination.

### ***Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 26-32, 71 and 77 are rejected under 35 U.S.C. 102(b) as being anticipated by Autryve (JUS 5,935,877).

Autryve teaches, ". . . a method for forming contact openings in an integrated circuit structure by plasma etching the insulating layer using a mixture

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of one or more fluorine containing gases and a nitrogenous gas (column 1, lines 7-10). "The one or more fluorine-containing etchant gases . . . will, of course, be understood to mean a fluorine-containing etchant gas (or gases). Such fluorine-containing etchant gases may comprise one or more 1-2 carbon fluorine-containing hydrocarbon gases such as, for example, CF<sub>4</sub>, CHF<sub>3</sub>, CH<sub>2</sub>F<sub>2</sub>, CH<sub>3</sub>F, C<sub>2</sub>F<sub>6</sub>, and mixtures of same" (column 4, lines 32-39). "The nitrogen-containing gas operable within the instant process may be any plasma etch nitrogen containing gas such as N<sub>2</sub>O, NO, NO<sub>2</sub>, N<sub>2</sub>H<sub>4</sub>, NH<sub>3</sub>, nitrogen gas, N<sub>2</sub>, and mixtures thereof" (column 3, lines 25-55). The above reads on,

A composition suitable for use in etching an insulative layer formed over a substrate in a semiconductor device, said composition comprising:

a flowing plasma etchant mixture consisting of at least one fluorocarbon and ammonia, **in claim 26**.

wherein said fluorocarbon is at least one member selected from the group consisting of fluorocarbons, **as in claim 27**;

wherein said fluorocarbon is at least one member selected from the group consisting of C<sub>4</sub>F<sub>8</sub>, C<sub>4</sub>F<sub>6</sub>, C<sub>5</sub>F<sub>8</sub>, CF<sub>4</sub>, C<sub>2</sub>F<sub>6</sub>, CHF<sub>3</sub>, and CH<sub>2</sub>F<sub>2</sub>, **in claim 28**; and

wherein said fluorocarbon is at least one member selected from the group consisting of CF<sub>4</sub>, CHF<sub>3</sub>, and CH<sub>2</sub>F<sub>2</sub>, **in claim 29**;

wherein said fluorocarbon is at least two members selected from the group consisting of CF<sub>4</sub>, CHF<sub>3</sub>, and CH<sub>2</sub>F<sub>2</sub>, **in claim 30**; wherein said fluorocarbon is a combination of CF<sub>4</sub>, CHF<sub>3</sub>, and CH<sub>2</sub>F<sub>2</sub>, **in claim 31**; and said

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composition consisting of: a plasma etchant mixture consisting of at least two fluorocarbons  $\text{CF}_4$  and  $\text{NH}_3$ , **in claim 71**; and

A composition suitable for use in etching an insulative layer formed over a substrate in a semiconductor device, said composition comprising:

a gaseous etchant mixture consisting of at least one fluorocarbon and ammonia, **in claim 77**.

Since Autryve teaches the same plasma etchant as claimed by applicants, then using Autryve's etchant in the same manner as in the claimed invention would inherently result wherein said composition is ineffective to remove side wall spacers of a gate stack formed over said substrate, **in claim 32**.

### ***Response to Arguments***

5. Applicant's arguments with respect to claims 26-32, 71, and 77 have been considered but are moot in view of the new ground(s) of rejection because independent claims 26, 71, were amended and claim 77 was added, respectively to recite a composition consisting of:

a flowing plasma etchant mixture consisting of at least one fluorocarbon and ammonia; a plasma etchant mixture consisting of at least two fluorocarbons  $\text{CF}_4$  and  $\text{NH}_3$ , and

a gaseous etchant mixture consisting of at least one fluorocarbon and ammonia

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***Conclusion***

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lynette T. Umez-Eronini at 571-272-1470. The examiner is normally unavailable on the First Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nadine Norton can be reached on 571-272-1465. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Itue

December 23, 2004



**ROBERT KUNEMUND**  
**PRIMARY EXAMINER**